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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/849,349	05/18/2004	Motomi Matsunaga	1232-5416	6734

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EXAMINER

CHAPEL, DEREK S

ART UNIT	PAPER NUMBER
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2872

DATE MAILED: 04/04/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/849,349	Applicant(s) MATSUNAGA, MOTOMI	
	Examiner Derek S. Chapel	Art Unit 2872	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 May 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on _____ is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>5/18/2004</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Priority

1. Acknowledgment is made of applicant's claim for foreign priority based on an application filed in Japan on 5/19/2003. It is noted, however, that applicant has not filed a certified copy of the Japanese (Japan 2003-140352) application as required by 35 U.S.C. 119(b).

Specification

1. The abstract of the disclosure is objected to because "is disclosed" needs to be deleted from line 1 and "comprises needs to be changed to --includes-- in line 5. Correction is required. See MPEP § 608.01(b).

Claim Objections

2. Claims 2 and 7 are objected to because of the following informalities:
- a. Change "system forms further" to --system further-- in line 3 of claim 2;
 - b. Change "and an the" to --and the-- in line 5 of claim 7.
- Appropriate correction is required.
3. Claim 6 recites the limitation "the display luminous flux" in line 6. There is insufficient antecedent basis for this limitation in the claim. Note that the antecedence problem can be fixed by changing "display luminous flux" to --displaying luminous flux--.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1, 3-5, and 7-8 are rejected under 35 U.S.C. 102(b) as being anticipated by Togino et al., U.S. Patent No. 6,222,676, hereafter Togino.

6. As to claim 1, Togino teaches a first optical element (See Figure 1, Element 20) and a second optical element (See Figure 1, Element 10) in order from the side of an exit pupil (See Figure 1) of the optical system to the side of the display device (See Figure 1, Element 3, and Col. 17, Lines 26-28), wherein a combined optical power provided by an emergent surface of the second optical element and an incident surface of the first optical element is a negative optical power (it is noted by the examiner that the first optical element is taken to have a negative optical power due to its shape resembling a concave lens that is narrower in the middle than it is at the top), and optical system forms an intermediate image with the displaying luminous flux in the first optical element (See Figure 1, Element 4, and Col. 17, Lines 34-45).

7. As to claim 3, Togino teaches the combination of claim 1, wherein the optical system forms a pupil image in an optical path of the displaying luminous flux in the first optical element (See Figure 1, Element 4, and Col. 17, Lines 34-45).

8. As to claim 4, Togino teaches the combination of claim 1, wherein the optical system forms a pupil image in an optical path of the displaying luminous flux in the

second optical element (it is noted by the examiner that an intermediate image appears to form in element 10 of figure 1 due to the focusing nature of surface 11).

9. As to claim 5, Togino teaches the combination of claim 1, wherein at least one of the first and second optical elements includes a reflective surface decentered with respect to an optical path of the displaying luminous flux (See Figure 1, Elements 22, 23, and 12, and Col. 2, Lines 42-48).

10. As to claim 7, Togino teaches the combination of claim 1, wherein the first optical element reflects the displaying luminous flux a plurality of times by a reflective surface which is decentered with respect to an optical path of the displaying luminous flux (See Figure 1, Element 20, and Col. 2, Lines 42-48), and an the optical system includes a case where an inner product which is formed between outer products each formed by a vector indicating incident light and a vector indicating reflected light in the respective reflections is negative (it is noted by the examiner that this limitation appears to be met by the optical system disclosed in Figure 1 of Togino, wherein the optical structure and system of the applicant's recited system and the optical elements and system of Figure 1 of Togino are similar to each other).

11. As to claim 8, Togino teaches a display device (See Figure 1, Element 3) which forms an original image (See Figure 1, and Col. 2, Lines 42-48); and the optical system according to claim 1.

12. Claims 1, 3, and 5-8 are rejected under 35 U.S.C. 102(b) as being anticipated by Takeyama, U.S. Patent Publication 2002/0039232 (hereafter Takeyama).

13. As to claim 1, Takeyama teaches a first optical element (See Figure 14, Element P1) and a second optical element (See Figure 14, Element P2) in order from the side of an exit pupil (See Figure 14, Element 31) of the optical system to the side of the display device (See Figure 14, Element 36, and Col. 23, Lines 1-12), wherein a combined optical power provided by an emergent surface of the second optical element and an incident surface of the first optical element is a negative optical power (it is noted by the examiner that the first optical element is taken to have a negative optical power due to the similar shape of applicant's first optical element), and optical system forms an intermediate image with the displaying luminous flux in the first optical element (See Figure 14).

14. As to claim 3, Takeyama teaches the combination of claim 1, wherein the optical system forms a pupil image in an optical path of the displaying luminous flux in the first optical element (See Figure 14).

15. As to claim 5, Takeyama teaches the combination of claim 1, wherein at least one of the first and second optical elements includes a reflective surface decentered with respect to an optical path of the displaying luminous flux (See Figure 14, Elements 33, 32, 34 and 42).

16. As to claim 6, Takeyama teaches the combination of claim 1, wherein the first optical element includes at least a first surface which has a reflecting action (See Figure 14, Element 33) and a second surface which reflects the displaying luminous flux reflected by the first surface back toward the first surface (See Figure 14, Element 32) such that a central principal ray of the display luminous flux incident again on the first

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surface is reflected and travels toward a substantially opposite side to a reflecting side in the previous reflection with respect to a normal to the first surface at a hit point of the central principal ray (See Figure 14, Element 34).

17. As to claim 7, Takeyama teaches the combination of claim 1, wherein the first optical element reflects the displaying luminous flux a plurality of times by a reflective surface which is decentered with respect to an optical path of the displaying luminous flux (See Figure 14, Elements P1, 33, 32, and 34), and an the optical system includes a case where an inner product which is formed between outer products each formed by a vector indicating incident light and a vector indicating reflected light in the respective reflections is negative (it is noted by the examiner that this limitation appears to be met by the optical system disclosed in Figure 14 of Takeyama, wherein the optical structure and system of the applicant's recited system and the optical elements and system of Figure 14 of Takeyama are similar to each other).

18. As to claim 8, Takeyama Togino teaches a display device (See Figure 14, Element 36, and Col. 23, Lines 1-12) which forms an original image (See Figure 14, Element 36); and the optical system according to claim 1.

Claim Rejections - 35 USC § 103

19. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

20. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Togino et al., U.S. Patent No. 6,222,676 (hereafter Togino) in view of Imamura et al., U.S. Publication No. 2002/0180907 (hereafter Imamura).

21. As to claim 2, Togino discloses the combination of claim 1, wherein the display device is a reflective display device (See Figure 1, Element 3, and Col. 2, Lines 42-48).

Togino lacks where the optical system further comprises a third optical element between the reflective display device and the second optical element.

However, Imamura discloses a reflective display device (See Figure 1) that further comprises a polarizing plate on the reflective display device (See Figure 1, Element 19).

Therefore, it would have been obvious to someone of ordinary skill in the art at the time the invention was made to put a polarizing plate in front of the reflective display device, as taught by Imamura and therefore between the reflective display device and the second optical element of Togino for the purpose of only allowing desirable polarizations of light to reflect off the LCD and for glare reduction.

Other Related Art

22. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Inoguchi, U.S. Publication Number 2002/0167463, discloses an optical system comprising a decentered optical element and an image displaying apparatus using the same.

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Conclusion

24. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Derek S. Chapel whose telephone number is 571-272-8042. The examiner can normally be reached on M-F 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew A. Dunn can be reached on 571-272-2312. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


DSC
3/30/2006


DREW A. DUNN
SUPERVISORY PATENT EXAMINER